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ABSTRACT

Using personnel files provided by New York's state education department, this study examines and compares teacher retention rates in relation to region and gender from 1974 through 1984 in school districts using alternative practices of internal salary distribution. A total of 57 school districts from 2 regions of the state were included in the study, 15 districts were from a rural, 4-county region and 42 were from a suburban county outside New York City. Each region's districts were categorized according to changes during 1974-84 in relative attractiveness of salaries offered entry level (maximum 3 years experience), mid-career (9-11 years district experience), and senior teachers (minimum 17 years district experience). Although data reveal positive correlations between district retention rates and salary improvements in both regions, regional and gender-related differences exist in teacher labor market behavior. In the wealthier, suburban region, districts that have improved the attractiveness of salaries paid to mid-career teachers have the highest retention rates, whereas the highest retention rates in the rural region are among districts experiencing little change in their salaries' relative attractiveness. Analysis of gender-related differences in labor market behavior indicates that female teachers are more responsive to salary improvements that males, particularly male teachers in rural districts. A two-page reference list and seven data tables are appended. (Author/CJH)

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THE DISTRIBUTION OF SALARY INCREMENTS AND ITS EFFECT ON TEACHER RETENTION

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Abstract

Using personnel files provided by the State Education Department of New York, teacher retention rates were examined and compared from 1974 through 1984 in school districts that used alternative practices of internal salary distribution. A total of 57 school districts from two regions of the State were included in the study, 15 districts from a rural, four-county region and 42 districts from a suburban county outside of New York City. Districts within each region were categorized on the basis of changes from 1974 to 1984 in the relative attractiveness of salaries offered entry-level (newly-hired teachers with no more than 3 years of prior experience), mid-career (9-11 years district experience), and senior teachers (at least 17 years of district experience).

Although the data revealed positive correlations between district retention rates and salary improvements in both regions, regional and gender related differences were found in teacher labor market behavior. In the wealthier, suburban region, districts that improved the relative attractiveness of salaries paid mid-career teachers had the highest retention rates, while the highest retention rates in the rural region were found in districts that experienced little or no change in the relative attractiveness of their salaries. An analysis of gender-related differences in teacher labor market behavior revealed that female teachers were more responsive to salary improvements than their male counterparts, particularly male teachers in the rural districts who were relatively indifferent to salary improvements.

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Policy Issues

Among the issues addressed in recent reports about the state of American education was concern about the migration of high caliber teachers from the classroom to better paying positions in the private sector. This concern elicited numerous calls for increased teacher salaries to encourage superior teachers to remain in the profession (e.g., Boyer 1983; Goodlad 1983; National Commission on Excellence in Education 1983). As Futrell (1984) noted,

> Every major national report on education released in 1983 stated strongly that raising teacher salaries should be a top, if not the top, priority of the educational reform movement.

The 'second wave' of educational reform appears to be no less commited to the use of improved monetary rewards is a mechanism through which the quality of the teacher workforce can be upgraded. The Carnegie Forum on Education and Economy (1986), for example, recommended that "Lead" teachers be paid as much as $72,000 per year, in the belief that, "Higher teacher pay is an absolute prerequisite to attracting and keeping the people we want in teaching".

Given the level of interest in improving teacher compensation over the past few years, it is surprising that a review of the relevant literature provides only limited support for the assumption that individual decisions to remain in teaching are influenced by increased pecuniary rewards. Some contend that individual decisions to remain in the profession are influenced to a greater extent by intrinsic, non-pecuniary benefits than by material rewards (Chapman and Hutcheson 1982; Johnson 1984), while others believe that teachers are no different than workers in other occupations where money is effectively used as an incentive (Casey 1979).

Goodlad (1983) addressed both positions when he pointed out that money may not be the primary reason teachers give for entering teaching, but that it does rank second as a reason for leaving. He speculated that teachers begin their careers with a willingness to forego high salaries anticipating rewards intrinsic to their work, but if these expectations are frustrated, salaries become a source of considerable job dissatisfaction, which is often manifest through high rates of turnover. Goodlad's observations suggest that while intrinsic rewards are central to teacher labor market decisions, they are not sufficient to retain teachers if salaries are perceived as inadequate.

Presently over 99% of America's teachers are employed in school districts that utilize uniform salary schedules that differentiate teacher compensation primarily on the basis of experience (Murnane and Cohen 1985). Presumably, district policy-makers exercise discretion as to how salary increments are distributed across these schedules,[1] e.g., policy-makers may choose to distribute across-the-board percentage increases or differentially distribute increments to address perceived district needs.

Over the past decade, common practice has been for districts to "backload" their salary increments, i.e., add larger increments to salaries at the top steps of the schedule than at the entry-level (NEA 1980). Data from New York indicates that between 1973 to 1983, school districts distributed significantly larger percentage increases to veteran relative to novice teachers (Monk and Jacobson 1985). In fact, during this period, mean salaries for teachers at both the top and entry levels of New York's schedules grew more rapidly than salaries paid teachers at the middle of the schedule. Specifically, mean salaries paid teachers with 17 or more years

[1] In jurisdictions where collective negotiations are mandatory, policy-makers of district compensation include teacher union representatives as well as district administrators, a factor that limits administrative discretion when making distribution decisions.

of district experience grew 81% from 1974 to 1984, salaries paid newly-hired teachers grew 69%, while salaries paid teachers with 9-11 years of experience grew only 61% (Jacobson 1986).

Although the factors that produced these internal distribution patterns remain a subject of speculation (e.g., declining enrollments, reductions in force, and the aging of the teacher workforce, Monk and Jacobson 1985; Jacobson 1986), it is clear that budgetary constraints make a school district's internal distribution choices a zero-sum game, i.e., the size of increments added to the top steps of the schedule come at the expense of what can be added to salaries at other parts of the schedule, and vice-versa. In making these distribution choices, district policy-makers could use help in determining patterns of allocation that will use district monies best. Unfortunately, there has been little research focused on how the distribution of salary increments across district schedules affects teacher behaviors such as retention.

Considering that as much as 70-80% of a school district's operating expenses often go towards securing teachers' services, understanding the relationship between the distribution of salary increments and teacher labor market behavior is of crucial importance, particularly in light of current educational reform proposals seeking to address retention problems through increased pecuniary rewards. Indeed, the willingness of American taxpayers to continue to finance improvements in teacher salaries will depend, to a great extent, upon the relationship between improvements in compensation and subsequent teacher behaviors. As Kirst (1986) noted,

> The states are trying all kinds of interventions - including career ladders, higher base salaries, improved working conditions, and forgivable loans - without a clear notion of which approaches will yield the best results.
>
> Fortunately, there is such diversity in the approaches to reform taken by the states and local districts that we have what amounts to a nationwide experiment to determine which approaches work best.

To this end, the present study examined how school districts in two very different regions of New York State distributed increments across their salary schedules between 1974 and 1984, and the relationship between alternative distribution practices, expressed as changes in regional salary rankings, and rates of teacher retention. Specifically, the study addressed the following three questions:

(1) Are school districts that improve the attractiveness of their salary offerings, relative to other districts in the region, better able to retain teachers?

(2) Are improvements in certain parts of the salary schedule more likely to result in higher retention than improvements in other parts of the schedule?

(3) Do differences exist in the responses of different categories of teachers to salary improvements?

Theoretical Issues

Perhaps the single most important reason that salary has been singled out by advocates of educational reform is that it represents the most visible and tangible component of teacher compensation, and as such, the most amenable to comparison. Changes in salary enable individuals both in- and outside of the profession to anticipate quantifiable differences in present and future earnings, and thus draw comparisons with potential earnings offered by other employment opportunities. Unlike many of the other factors that teachers report attract them to the profession, e.g., the desire to work with youngsters and/or the belief that teachers serve a special mission in society (Lortie 1975), salary is a component of teacher compensation over which policy-makers have control. As Dyer, Schwab

and Fossum (1978) argue, salary is probably the single most important reward that an organization has to offer.

The potential effectiveness of salary improvements as a mechanism for increasing teacher retention receives theoretical support from both the Two-factor and Equity theories. Herzberg's Two-factor Theory (1966) suggests that rewards extrinsic to the content of work, such as salary,

> ... act in a manner analogous to the principles of medical hygiene. Hygiene operates to remove health hazards from the environment of man. It is not a curative; it is, rather, a preventative.

In other words, increased salaries will make teachers' work environment less unpleasant, which will reduce their job dissatisfaction and thereby improve retention. To this, Equity Theory[2] adds that employees are more satisfied with their compensation when they believe that 'what is' is 'what should be', i.e., when their earnings compare favorably with those of comparable workers at other sites. Applied to teaching, equity suggests that teachers in a district are more satisfied with their salaries, when their salaries equal or exceed salaries paid teachers with equivalent experience in other districts.

Combining the two approaches, we see that retention is related to satisfaction with extrinsic rewards received, and that reward satisfaction is a function of comparisons between actual earnings and estimates of alternative earning potential. For example, assume that all districts in a region paid teachers the same salary in Year 1. If District X increased its teachers' salaries by $1000 in Year 2, but all other districts increased their teachers' salaries by $2000, the combined approach would predict that teacher reward satisfaction in District X

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[2] For a more complete elaboration of Equity Theory see, for example, J.S.Adams (1965), "Injustice in Social Exchange," in L.Berkowitz, ed., *Advances in Experimental Social Psychology,* Vol.2, New York: Academic Press, 1965: 267-299, or K.E.Weick, "Equity and the Perception of Pay," *Administrative Science Quarterly* 11 (1966): 415-418.

would not improve. In fact, even with the $1000 increase, District X's teachers would be more dissatisfied with their compensation in Year 2 than teachers in the other districts. Furthermore, the relationship between retention and reward satisfaction suggests that, in this hypothetical case, District X should experience more turnover than its neighboring districts. As a result, the effects of salary increases on teacher retention need to be examined in relative rather than absolute terms, since, theoretically, increases in salary will not improve reward satisfaction if the increases do not improve comparisons between actual and alternative earnings.

As noted earlier, uniform salary schedules determine compensation differentials for the vast majority of teachers, and policy-makers have discretion as to how they distribute salary increments across these schedules. This raises the question of whether salary improvements are more effective at one one part of a schedule than another. Observations of teacher career patterns indicate that a "typical" teacher's career passes through a series of phases that include a sorting-out phase (the first five to seven years of teaching), which is characterized by a high degree of mobility (Charters 1964; Charters 1970; Mark and Anderson 1976), and a career phase (seven or more years of experience), during which teachers become less likely to migrate from district to district or leave the profession entirely (Greenberg, McCall 1974; Murnane 1981; Pedersen 1973). To the extent that improvements in the relative attractiveness of salary offerings can reduce turnover, then attention to salaries paid those most likely to leave should prove more effective than attention to salaries paid those most likely to stay.

Observations of teacher career patterns also reveal that the determinants of behavior that can be differentiated on the basis of teacher gender. Charters (1967), for example, cautioned that the occupational behaviors of male and female teachers are governed by such disparate forces that "we cannot speak of the two

sexes in the same breath." He argued that the importance of salary as an incentive to curb turnover by female teachers pales beside the culturally-inspired drives to marry and raise a family. Lortie (1975) also found that the interests of female teachers appear not to be closely tied to incentives provided by school systems. He suggested, in fact, that money differentiates the appeal of teaching by gender, because alternatives foregone appear to be subjectively more costly to men than to women, i.e., men feel that they have sacrificed more in order to teach. As a result, male teachers are more attentive to the pecuniary rewards that teaching has to offer. For example, Pedersen (1973), in a socio-economic analysis of teacher turnover, tracked the movement of teachers between and out of Michigan school districts and found that higher salaries in receiving districts were especially important in attracting young (under age 30) male teachers.

Societal changes in the years that have intervened since the studies cited have resulted in a wider range of employment opportunities being available to women. Talented women are less restricted in their career alternatives, and, as a result, may be more attentive to the relative attractiveness of teaching's salary offerings than they once were.

Methods

This study examined the relationship between changes in districts' regional salary rankings and districts' rates of teacher retention in two regions of New York State. The study was based on three interrelated propositions:

(1) changes in districts' regional salary rankings are a useful indicator of the internal distribution of salary increments;

(2) teachers are attentive to changes in the relative attractiveness of their employing district's salary offerings;

(3) district retention rates are useful indicator of teacher behavior.

A regional analysis was employed because it revealed the relative attractiveness of all salaries available to teachers in that market. Districts in each region were rank-ordered on the basis of salaries paid teachers at three levels of experience:

(1) Entry: mean salary paid newly-hired teachers with no more than 3 years of prior experience.

(2) Mid-career: mean salary paid teachers with 9 to 11 years of district experience and no more than 15 years of total teaching experience.

(3) Senior: mean salary paid teachers with a minimum of 17 years of district experience.

District salaries were calculated at each level and then ranked within the region in descending order in 1974 and 1984. Changes in regional rankings (1974 ranking - 1984 ranking) revealed changes in the relative attractiveness of salary offerings across districts' schedules vis-a-vis salary offerings of other districts in the region. Since salaries were ranked in descending order, a positive rank change revealed an improvement in the relative attractiveness of that salary level. Note that because three salary levels were reported, districts could simultaneously gain and lose across their schedules, indeed this would be predicted by the zero-sum nature of internal distribution.

District retention rates were calculated using the following index:

$$RT_i = (D_i / P_i) \times 100$$

where:

RT_i = The Rate of Teacher Retention in District "i",

D_i = 1974 District "i" Teachers Still Working in District "i" in 1984,

P_i = All 1974 District "i" Teachers under 61 years of age.

Teachers over 60 years of age in 1974 were excluded from the calculation of district retention rates in order to reduce the incidence of age-related retirement.

The relationship between retention rates and changes in salary rankings was then measured by (a) zero-order correlations and (b) paired comparisons of districts categorized on the basis of changes in mid-career and senior salary rankings, i.e., districts whose salary rankings increased, decreased or remained the same. (Comparisons of entry-level changes were omitted based on the assumption that once within a district, a teacher's decision to remain would reflect future rather than past earnings.)

A district's ranking was considered to have (a) increased if its ranking improved > +2 from 1974-1984, (b) remained the same if its ranking changed <= +2 and <= -2, or (c) decreased if its ranking declined > -2. Separate analyses were run for the Senior and Mid-career rankings, and the retention rate of every district within a grouping was compared with the retention rate of every district in the other two groupings. The results of these comparisons were reported as the percentage of times the retention rates of districts in each change of rank category exceeded the retention rates of districts in the other categories. Correlations and paired comparisons were rerun on the bais of teacher sex to examine gender differences in teacher labor market behavior.

It should be noted that underlying this study is the implication that turnover is a problem that school districts need to address. For districts where high rates of teacher turnover impede the delivery of educational services, this is indeed the case, but, for other districts, turnover may serve a positive function. For example, Hamermesh (1974) speculated that mobility serves as an antidote for job dissatisfaction. If teachers are aware of alternative opportunities and their mobility is not inhibited, they can "try-out" alternatives until they find a job which is satisfactory. If their mobility is inhibited, teachers are more likely to get 'stuck' in jobs they dislike, and their dissatisfaction can have a negative effect on faculty morale.

Limitations of the Study

The present study has two important limitations. First, the methodology used to determine the relationship between salary distribution and teacher behavior cannot be used to attribute causation, i.e., the case cannot be made that individual teachers remained in or left school districts because of changes in the relative attractiveness of their salaries. Second, the study does not address the issue of teacher quality, i.e., the teaching ability of teachers who remained in or left school districts. Schlecty and Vance (1981) found that rates of attrition among North Carolina teachers were higher for the most academically able third of teachers than for the least able third. To the extent that Schlecty and Vance's results are generalizable and that academic ability is a reasonable proxie for teaching ability, then the argument could be made that a positive relationship between salary increases and teacher retention merely results in school districts paying more for less.

The Regions

The two regions studied, Nassau and Delaware-Chenango-Madison-Otsego (D.C.M.O.), differ across a number of demographic characteristics. Nassau County is a suburb of Metropolitan New York City, encompassing 56 school districts with an average enrollment of 3319 and an average district size of 5.2 square mile area. In contrast, the D.C.M.O. region of Central New York encompasses four predominantly rural counties composed of 18 school districts, each with an average enrollment of 987 students in a 101.4 square mile area. As a result of these

enrollment/size differences, the Nassau region has a student density of approximately 636 per sq. mi., as compared to only 10 per sq. mi. in D.C.M.O.

Based on three indicators of community wealth, collected by the New York State Education Department in 1984/85, Nassau school districts are also considerably wealthier, on average, than their D.C.M.O. counterparts (see Table 1).

As a result of these differences in wealth, it is perhaps not surprising that Nassau's teachers earn considerable more than their D.C.M.O. colleagues. A brief look at salaries paid in 1974 and 1984 reveals that mean salaries at each of the three levels began higher in Nassau than D.C.M.O. and that the differences have widened over time (see Table 2).

Percentage changes over time reveal that Nassau districts, on average, distributed their salary increments in an across-the-board fashion with increases ranging from 75-77%, while D.C.M.O. districts were, on average, more attentive to salaries paid senior teachers (76% increase), than salaries paid either entry-level (60%) or mid-career teachers (56%). As a result of these distribution patterns, salaries of senior teachers in D.C.M.O. kept pace with salaries of senior teachers in Nassau, in relative terms, while salaries of entry and mid-career teachers fell further behind in both absolute and relative terms. In fact, by 1984, the mean entry-level salary in Nassau was almost $1000 higher than the mean salary paid mid-career teachers in D.C.M.O.

These findings are offered for descriptive purposes only, since the present study is based on the assumption that teacher reward satisfaction is determined primarily through wage comparisons within the regional market. Therefore, teachers in the lowest paying district in Nassau should be just as dissatisfied with their earnings as teachers in the lowest paying district in D.C.M.O.

Results

Changes in salary rankings and teacher retention rates for each district in the Nassau and D.C.M.O. are presented in Table 3. Table 3 reports the following information: (a) district codes from New York State's Personnel Master File, (b) changes in district regional rankings at each of the three salary levels, and (c) district retention rates, including separate retention rates for male and female teachers. Mean retention rates are reported for both regions.

Table 3 reveals the zero-sum nature of internal salary distribution. With few exceptions, a district's improvement in one part of its salary schedule was accompanied by a loss in one or both of the other salary levels. For example, in Nassau, of the 42 districts for which rankings were recorded at all three salary levels,[3] 31 districts showed a pattern of gain and loss. Of the other 11 districts, 5 improved in all three salary rankings over the ten years, while 6 districts dropped in all three. Of the 15 districts reported in D.C.M.O., 13 districts simultaneously gained and lost in salary rankings, while 2 districts dropped in all three rankings.

Table 4 reports the zero-order coefficients of correlation between district retention rates and changes in salary rankings. Table 4 reveals positive correlations between district retention rates and salary improvements at all three salary levels in both regions, although the magnitude of the coefficients indicates that teacher retention was differentially related to the salary level at which the changes occurred in the two regions. In Nassau, the strongest relationship between retention and rank change was at the mid-career level ($r = .450$), i.e., the more a

[3] Insufficient or invalid data reported on the Personnel Master File resulted in 14 districts from Nassau and 3 districts from D.C.M.O. being eliminated from the subsequent analyses.

district improved the relative attractiveness of its mid-career salaries, the higher its rate of retention. In the D.C.M.O. region, the strongest relationships between retention and improved rankings were at the entry ($r = .448$) and senior ($r = .405$) levels.

Note that in neither region was the relationship between teacher retention and changes in senior salary rankings the strongest. This finding suggests that districts in the two regions that backloaded salary increments to the advantage of their most senior teachers did not experience higher retention rates than districts attentive to other parts of their salary schedule, e.g., in Nassau, the middle of the schedule and in D.C.M.O. the entry-level. Recall, that the likelihood of turnover is highest during the first five years of a teacher's career, after which they are far less likely to migrate or leave the profession. As a result, making the earlier part of salary schedules more economically attractive may help to account for the higher retention rates experienced by districts that employed this approach. This can be seen more clearly in Table 5 which reports the paired comparisons of retention rates in districts categorized on the basis of whether their Senior and Mid-career salary rankings increased, decreased or remained unchanged.

Table 5 reveals that teachers in the two regions responded differently to changes in Senior and Mid-career salary rankings. In Nassau, districts that improved their regional salary rankings at these two levels had higher retention rates than districts whose rankings remained relatively unchanged, which in turn had higher retention rates than districts where rankings declined. These results were particularly strong at the Mid-career level, where districts that improved their regional salary ranking had higher retention rates in 68% of paired comparisons with districts whose Mid-career ranking remained the same, and 71% of paired comparisons with districts whose ranking declined.

Districts with the highest retention rates in the D.C.M.O. region were those whose Senior rankings had not changed, with higher retention rates in 61% of the paired comparisons with districts in the other two categories. At the Mid-career level, there was little difference across categories, since districts whose ranking remained the same and districts whose ranking had declined both had higher retention rates in 52% of the paired comparisons. In fact, the lowest percentage recorded at the Mid-career level was 46% for the districts that experienced an increase in their Mid-career ranking.

To summarize, the findings presented in Table 5 show that Nassau districts that improved the relative attractiveness of their salaries, particularly salaries paid mid-career teachers, were the most successful in retaining their faculty. In contrast, D.C.M.O. districts were most successful in retaining faculty when they simply maintained the relative attractiveness of their salaries. Yet, the aggregate findings reported in Tables 4 and 5 mask gender differences in teacher behavior, particularly in the rural districts of D.C.M.O. where retention rates of female teachers had highly positive relationships with improvements in Senior and Mid-career salary rankings, while retention rates of male teachers appear to have been related to factors other than salary improvements (see Tables 6 and 7).

Gender-Related Differences in Teacher Retention

Table 6 reports zero-order coefficients of correlations between gender differentiated retention rates and changes in salary rankings, while Table 7 reports the summary totals of gender differentiated paired comparisons.

The findings in Table 6 indicate that female teachers in the rural districts behaved more like teachers in Nassau than like their male counterparts in D.C.M.O. In fact, the correlation coefficients reveal that the strongest relationships reported were those between retention of female teachers in rural districts and

changes in salary rankings at the Mid-career ($r = .546$) and Senior levels ($r = .582$). In other words, the greater the improvement in the relative attractiveness of their Mid-career and Senior salaries, the higher were the retention rates of female teachers in D.C.M.O. districts.

In Nassau, positive correlations existed between retention rates and changes in all three salary rankings for both male and female teachers, with the correlations being stronger for female teachers at each level and strongest for both sexes at the Mid-career level ($r = .343$ for males and $r = .483$ for females). Therefore, though it appears that teachers of both sexes in Nassau were responsive to salary improvements throughout the schedule, female teachers were apparently more responsive to these factors than their male counterparts. Indeed, the relationship between retention rates for male teachers and improvements in Senior salary rankings in Nassau, though positive were not very strong ($r = .056$).

The coefficients of correlation between retention rates of male teachers in D.C.M.O. and changes in salary rankings are perhaps the most interesting presented in Table 6, because they differ the most from the correlations of other teachers. Note that the only highly positive correlation was between retention rate and change in entry ranking ($r = .304$), while the correlation with Senior ranking was only slightly positive ($r = .045$) and the correlation with Mid-career slightly negative ($r = -.052$). In other words, neither of the change in salary rankings that were positively related to the retention rates of other teachers appeared to have any relationship with how male teachers in the rural districts behaved. This finding is reinforced in Table 7 which shows that in the paired comparisons, the retention rates for male teachers in Delaware-Chenango-Madison-Otsego were highest in districts that had not changed their Senior ranking and in districts that had not changed or had dropped in their Mid-career ranking.

The findings presented in Table 7 indicate that the retention rates of male teachers in both regions were less dependent upon how district salary increases were distributed than were the retention rates of female teachers. Note that the highest comparative retention rates in both regions were found for female teachers in districts that improved their Mid-career and Senior salary rankings, with the highest rates being at the Mid-career level in the Nassau districts and at the Senior level in the D.C.M.O. districts.

These findings bring into question the conclusion of earlier studies that the behavior of female teachers is less dependent upon conventional economic forces than is the behavior of male teachers. Although retention rates were higher for male teachers in both regions, 57% to 47% in Nassau, 53% to 43% in D.C.M.O. (Table 3), societal changes since the 1960's studies of Charters and others (e.g., the increased number of single parent households), may have forced females who remain in the profession to become more responsive to economic factors than their male counterparts.

Conclusions and Policy Implications

The present study sought answers to three questions related to the distribution of salary increments and its effect on teacher retention, based on data collected in two regions of New York State between 1974 and 1984. The first question, whether school districts that improved the relative attractiveness of their salary offerings were better able to retain teachers, could be answered in the affirmative, although there were some regional differences. For example, while the study revealed positive zero-order correlations between teacher retention and improvements in salary rankings in both regions, a series of paired comparisons indicated that the highest retention rates among 15 districts in a rural region of Central New York

were found in districts whose regional salary rankings had remained relatively unchanged. In contrast, the highest retention rates among 42 districts in a suburban region of Metropolitan New York were found in districts whose regional salary rankings had improved. It should be noted that aggregate data from the rural districts masked gender-related differences, and that correlations and paired comparisons revealed that the retention rates of female teachers were positively related to improved salary rankings.

The second question, whether improvements in certain parts of the salary schedule were more likely to result in higher retention than improvements in other parts of the schedule, also yielded results that were regionally differentiated. In the rural region, improvements at different parts of district salary schedules seemed to make little difference, since the highest retention rates were found in districts whose regional salary rankings had remained relatively unchanged. In contrast, the highest retention rates in the suburban region were found in districts that improved the relative attractiveness of salaries offered at the middle of their schedules.

These findings suggest that the practice of backloading salary increments, a practice that was commonly employed in New York State during the 1970's, may not have been an efficient allocation of fiscal resources. In terms of teacher retention, greater attention to salaries paid at the middle of district schedules appeared to have been a more effective approach to internal distribution, at least in one region of the state, perhaps because it made salaries more attractive to teachers most likely to leave.

The third question, do differences exist in the responses of different categories of teachers to salary improvements?, provided some interesting answers when the data was re-analyzed on the basis of teacher sex. Consistently high, positive relationships were reported for female teachers in both regions. On the other

hand, salary improvements seemed to be less of a factor in the retention of male teachers, particulary among males in the rural districts.

The policy implications of these findings are that salary improvements appear to have an important role to play in improving teacher retention, particularly for female teachers. Furthermore, the study suggests that the manner in which salary increments are distributed internally is a factor to which district policy-makers should be attentive. Specifically, the findings indicate that, in terms of teacher retention, the widespread practice of back-loading salary increments to the advantage of senior teachers was a less efficient allocation of fiscal resources than attention to salaries paid mid-career teachers.

Continuing the momentum of the recent educational reform movement, and the willingness of the taxpayer to underwrite it, will depend upon the public's perception that its money is being well spent. As Kirst (1986) argues, "Implementing, evaluating, and researching the cost-effectiveness of various reforms (i)s an urgent priority". The present study is offered as a step in that direction.

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Table 1

Comparison of Nassau and Delaware-Chenango-Madison-Otsego Wealth Characteristics

	Nassau	D.C.M.O.	% Difference
FV/TWPU ($)	139,640	78,096	179%
Adj. Inc/TWPU ($)	77,497	22,630	342%
% Poverty	5.6	14.8	38%

FV/TWPU = Full value property in dollars per tuition weighted pupil unit.
Adj. Inc/TWPU = Adjusted income in dollars per tuition weighted pupil unit.
% Poverty = Families with children aged 5-18 living in poverty (1980 Census).

Table 2

Mean Entry, Mid-career and Senior Salaries, 1974 and 1984

Nassau

	1974	1984	% Increase
Entry Level ($)	10928	19176	75%
(S.D.)	757	2127	
Mid-career ($)	16995	29755	75%
(S.D.)	1303	3063	
Senior ($)	20767	36829	77%
(S.D.)	1102	2304	

Delaware-Chenango-Madison-Otsego

	1974	1984	% Increase
Entry Level ($)	7986	12799	60%
(S.D.)	451	1459	
Mid-career ($)	11711	18318	56%
(S.D.)	801	1497	
Maximum ($)	13750	24259	76%
(S.D.)	1042	2723	

Table 3

Changes in District Salary Rankings and District Retention Rates

Nassau

District	Entry	Mid-career	Senior	District Retention Rates Total	Male	Female
280100	(-3)	(+7)	(+6)	56	62	51
280201	(-2)	(+11)	(-30)	49	47	48
280202	.	.	(-41)	48	56	43
280203	(+11)	(-6)	(-1)	52	58	46
280204	(+5)	(+22)	(0)	52	53	52
280205	(+20)	(-6)	(-17)	48	53	43
280206	(-6)	(+11)	(+9)	54	60	48
280207	.	.	.	50	67	47
280208	(-4)	(-5)	(-6)	36	27	40
280209	(+4)	(+18)	(+3)	58	60	56
280210	(+12)	(-19)	(-22)	59	63	56
280211	(-20)	(-8)	(+16)	54	60	49
280212	(+7)	(+2)	(-2)	47	60	40
280213	.	(+24)	(+32)	66	54	68
280214	.	(-16)	(-13)	52	58	48
280215	(+3)	(-13)	(-10)	54	59	50
280216	(+30)	(+13)	(-27)	48	61	45
280217	.	(-16)	(+1)	45	50	44
280218	(-34)	(0)	(+1)	58	67	48
280219	(+14)	(-19)	(-9)	52	57	48
280220	(+22)	(-7)	(-5)	62	74	52
280221	(-1)	(-18)	(+6)	48	55	44
280222	(+1)	(+13)	(-36)	54	73	49
280223	(-36)	(-22)	(-18)	43	48	38
280224	.	(+9)	(+35)	64	91	59
280225	(+4)	(+2)	(-1)	51	43	51
280226	(+11)	(+4)	(+3)	51	48	53
280227	.	.	.	45	61	36
280229	(+14)	(-30)	(-7)	45	36	45
280230	.	(+45)	(+22)	52	73	48
280231	(-8)	(-46)	(+1)	39	44	37
280251	(+22)	(+13)	(+19)	54	60	46
280252	(+8)	(-22)	(-12)	45	53	35
280253	.	.	.	53	60	46
280300	(-2)	(-11)	(+15)	53	55	50
280401	(-15)	(+1)	(-5)	53	60	48
280402	(-24)	(-13)	(-8)	41	34	45
280403	(+16)	(-2)	(0)	45	50	40

Table 3 (Continued)

280404	(+35)	(+8)	(0)	56	65	50
280405	(-1)	(-15)	(-7)	41	44	40
280406	(-4)	(-15)	(-17)	47	61	37
280407	.	.	.	54	53	54
280409	.	(+29)	(+17)	55	63	49
280410	.	.	.	49	54	45
280411	.	(-2)	(-30)	48	50	45
280501	(+21)	(+5)	(-4)	51	58	47
280502	(-1)	(+3)	(+26)	55	62	48
280503	(-13)	(+28)	(+21)	54	59	49
280504	(+17)	(-12)	(+3)	43	45	40
280506	(+33)	(+6)	(+19)	56	58	53
280515	(-25)	(-18)	(-1)	53	55	50
280517	.	.	(-29)	51	62	41
280518	(+33)	(+47)	(+11)	55	58	52
280521	(+31)	(-5)	(-14)	53	57	49
280522	(-16)	(0)	(+4)	52	57	47
280523	(+36)	(-5)	(+1)	59	66	54
Regional Means				51	57	47

Delaware-Chenango-Madison-Otsego

				District Retention Rates		
District	Entry	Mid-career	Senior	Total	Male	Female
80101	(-6)	(+3)	(-11)	43	53	38
80201	.	.	.	45	58	30
80601	(+8)	(-9)	(+2)	58	71	49
80701	(-6)	(-17)	(-11)	25	40	14
81001	(+4)	(0)	(-1)	57	64	47
81002	(+3)	(-2)	(-2)	31	13	39
81200	(-2)	(-3)	(+1)	59	69	52
81401	(+2)	.	.	51	42	60
81501	(+4)	(-1)	(+4)	56	56	56
82001	.	.	.	51	60	43
120301	(0)	(+3)	(-1)	51	47	55
120501	(-3)	(0)	(+2)	45	58	38
120701	(-11)	(+13)	(+7)	42	36	47
120906	(+1)	(-5)	(-1)	39	44	34
121601	(-1)	(+4)	(0)	46	58	40
121901	(-4)	(+3)	(-5)	49	43	54
470201	(-2)	(-2)	(-6)	48	60	38
471601	(+1)	(+3)	(-6)	53	73	41
Regional Means				47	53	43

Table 4

Coefficients of Correlation Between Retention Rate and Change in Salary Rank

	Nassau (N=42)	D.C.M.O. (N=15)
Entry	.233	.448
Mid-career	.450	.275
Senior	.252	.405

Table 5

Paired Comparisons of District Retention Rates by Change in Senior and Mid-career Salary Rankings

Percentage of higher district retention rates in each change category compared with district retention rates in other change categories. (Number of comparisons in parentheses)

Nassau

Senior	Increased	No Change	Decreased
# Districts	14	10	18
	58% (140)	42% (140)	
	71% (252)		29% (252)
		57% (180)	43% (180)
Totals	66% (392)	51% (320)	35% (432)
Mid-career			
# Districts	15	6	21
	68% (90)	32% (90)	
	71% (315)		29% (315)
		58% (126)	42% (126)
Totals	71% (405)	45% (216)	32% (441)

Delaware-Chenango-Madison-Otsego

Senior	Increased	No Change	Decreased
# Districts	2	8	5
	50% (16)	50% (16)	
	40% (10)		60% (10)
		65% (40)	35% (40)
Totals	46% (26)	61% (56)	40% (50)
Mid-career			
# Districts	6	5	4
	43% (30)	57% (30)	
	50% (24)		50% (24)
		45% (20)	55% (20)
Totals	46% (54)	52% (50)	52% (44)

Table 6

Coefficients of Correlation Between Retention Rates and Change in Salary Rankings (By Gender)

	Nassau (N=42)		D.C.M.O. (N=15)	
	Males	Females	Males	Females
Entry	.204	.232	.304	.301
Mid-career	.343	.483	-.052	.546
Senior	.056	.221	.045	.582

Table 7

Paired Comparisons of District Retention Rates (By Gender)

Percentage of higher district retention rates in each change category compared with district retention ratesin other change categories. (Number of districts/comparisons in parentheses)

Nassau

	Increased	No Change	Decreased
Senior	(14/392)	(10/320)	(18/432)
Males	54%	52%	45%
Females	63%	53%	36%
Mid-career	(15/405)	(6/216)	(21/441)
Males	66%	52%	34%
Females	71%	40%	36%

Delaware-Chenango-Madison-Otsego

	Increased	No Change	Decreased
Senior	(2/26)	(8/56)	(5/50)
Males	27%	61%	50%
Females	81%	52%	32%
Mid-career	(6/54)	(5/50)	(4/44)
Males	41%	54%	57%
Females	61%	50%	36%